Meadow Road Bridge
Spanning Beaver Dam on Meadow Road
Lowell Vicinity
Dodge County
Wisconsin

HAER No. WI-81

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Rocky Mountain Regional Office
National Park Service
P.O. Box 25287
Denver, Colorado 80225-0287

HAER NO. WI-81

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HISTORIC AMERICAN ENGINEERING RECORD

MEADOW ROAD BRIDGE

Location: Meadow Road over the Beaver Dam River
Lowell Vicinity, Dodge County, Wisconsin

USGS Reeseville Quadrangle, Universal Transverse Mercator Coordinates:
Zone 16 Easting 349525 Northing 4803600

Present Owner: Town of Lowell

Present Use: Vehicular bridge

Significance: The Meadow Road Bridge is a single span, Pratt through truss that was erected ca. 1890. Although it was not identified as a significant structure in Cultural Resource Management in Wisconsin (the state's cultural resource management plan), the bridge compares well with several of the five pre-1895 bridges that were noted--all of which were considered significant due to their "dwindling number" statewide.[1] The Meadow Road Bridge is also significant as the only remaining example of this bridge-type and period in the Town of Lowell, a community which once claimed three such examples.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: ca. 1890[2]

2. Architect: Unknown

3. Original and subsequent owners: Public ownership.

4. Builder: Milwaukee Bridge and Iron Works[3]

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[1]Barbara Wyatt, ed., Cultural Resource Management in Wisconsin, Vol.2 (Madison: State Historical Society of Wisconsin, Historic Preservation Division, 1986), Transportation 12/13.

[2]Philip H. Salkin, Determination of Eligibility for the Meadow Road Bridge, 1993, Case #93-1379, 8/1-2. On file at the Historic Preservation Division, State Historical Society of Wisconsin, Madison, WI.

[3]Bridge plate, Meadow Road Bridge, Vicinity of Lowell, WI.

5. Alterations and additions: The historical integrity of this structure is generally good. Its greatest problems appear to have been caused by a December 1993 accident in which a vehicle struck the bridge. The resulting damage includes an intermediate vertical that had to be reinforced. As well, the structure's west end hip verticals are deformed and beam-guard has replaced the three course, pipe railing in some places.

B. Historical Context:

DODGE COUNTY & LOCAL AREA HISTORY

Settlement in Dodge County began in 1836, when Jacob P. Brower, John Cole, Amasa Hyland and Luther A. Cole arrived in the area. Brower's was the first family to settle in Dodge County, and that was at Fox Lake, in the county's northwest corner. Settlement in the east half of the county did not really begin until 1844 and 1845, when Horicon and Mayville were established. The county itself was organized in 1840.[4]

Although iron ore was discovered and mined in the Mayville/Iron Ridge area, agriculture was the primary focus of those who came to the county. Indeed, over fifty percent of the county's land was devoted to farming by 1860. The county's agricultural development continued. By 1870, there were 4,913 farms which claimed 505,660 of the county's 563,545 acres. The number of farms and acreage devoted to their operation stayed constant, with minor variations, well into the twentieth century. [5]

Within this growing, agriculturally-oriented county, the Towns of Lowell and Beaver Dam were established.[6]

Initially, the Town of Lowell was heavily wooded, but soon much of the timber had been cleared to exploit the town's fertile soil. D.F. Eldred, a blacksmith and wagon maker, was the first permanent, white settler in Lowell, building a log cabin in 1842. Most of Lowell's early residents were Yankees, but immigrants, especially Germans, constituted a sizable part of the population. As noted, the township was ideally

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[4]History of Dodge County, Wisconsin (Chicago: Western Historical Company, 1880), 321-23.

[5]A Century of Wisconsin Agriculture, 1848-1948 (Madison: Wisconsin Crop & Livestock Reporting Service, 1948), 15, 87; State of Wisconsin: 1985-1986 Blue Book (Madison: State of Wisconsin, 1985), 711.

[6]Towns are an unincorporated unit of government into which counties are divided. They are also locally referred to as townships. Within towns or townships, villages and cities generally exist as separate, incorporated entities.

suited for agriculture, and most residents were quick to capitalize on that circumstance. In 1879, Lowell farmers harvested 7,165 acres of wheat, 1,316 acres of corn, 1,248 acres of oats and 693 acres of barley. Another 804 acres were devoted to grasses.[7]

Within the town is the Village of Lowell. Aside from Reeseville, it is the only other sizable community in the immediate area. Henry Finney was the first permanent, white resident in the present-day village. He arrived in 1846 and soon erected a gristmill and dam along the Beaver Dam River. Sheldon Fox and Clark Lawton soon became Finney's partners in the enterprise. A native of the famous mill town in Lowell, Massachusetts, Lawton successfully lobbied to have the new community named after his hometown, possibly with the hope that the fledgling village would experience similar success. Although Finney and Lawton also erected a sawmill on the opposite side of the river, the village never attained the lofty status which Lawton envisioned--perhaps because it was bypassed by the railroad.[8]

Lowell did, nevertheless, evolve into a support center for the surrounding agricultural community. Among its early businesses were a general store, hotel and tailor shop.[9] By 1879, Lowell numbered about three hundred inhabitants and boasted of four blacksmiths, a wagon maker, cheese factory, flour mill, implement dealer and stave factory. Five years later, the population had doubled, but began to dwindle in the 1890s. It remained relatively static thereafter, hovering between three and four hundred. Despite the decline, the village retained its agricultural orientation. The Pease family operated the flour mill as early as 1879 until the 1920s. Albert Kuentzel served as a wagon maker from 1879 into the early twentieth century. Lowell also included an array of agricultural implement dealers, cattle breeders, creamery proprietors and cheese manufacturers.[10]

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[7]History of Dodge County, 405-6; Homer Bishop Hubbell, Dodge County Wisconsin: Past and Present, 2 vols. (Chicago: The S.J. Clarke Publishing Company, 1913), 1:249-51; John G. Gregory, ed., Southeastern Wisconsin: A History of Old Milwaukee County, 4 vols. (Chicago: The S.J. Clarke Publishing Company, 1932), 2:1019; John G. Kading, "The Early History of Lowell," in Souvenir Program and Centennial History of Beaver Dam Wisconsin (Beaver Dam, WI: Historical Committee, Beaver Dam Centennial, Inc., 1941), 88-89.

[8]Hubbell, Dodge County, 1:252-53; History of Dodge County, 570; Gregory, Southeastern Wisconsin, 2:1047; Kading, "Early History of Lowell," 88.

[9]Gregory, Southeastern Wisconsin, 2:1047; Hubbell, Dodge County, 1:252-53; History of Dodge County, 570.

[10]Wisconsin State Gazetteer and Business Directory, 1879 (Milwaukee: William Hogg, 1879), 259; Wisconsin State Gazetteer and Business Directory, 1884-1885 (Chicago: R.L. Polk & A.C. Danser, 1884), 393; Wisconsin State Gazetteer and Business Directory, 1888-1889 (Chicago: R.L. Polk & Co., 1888), 492; Wisconsin State Gazetteer and Business Directory,1895-1896 (Chicago: R.L. Polk & Co., 1895), 482; Polk's Wisconsin State Gazetteer and Business

Immediately north of the Town of Lowell is the Town of Beaver Dam, the history of which is closely tied to that of the City of Beaver Dam. Jacob Brower, the town's first inhabitant, arrived in 1840. Thomas Mackie, Brower's brother-in-law, settled there in 1841. Brower and Mackie were soon joined by Morris Furmin, Abram Ackerman, James Connor, James Howe, Henry Stultz and David Drake. The City of Beaver Dam is the only community of any note within the town; the majority of the town's remaining land was devoted to agricultural pursuits. In 1879, Beaver Dam farmers planted 7,322 acres of wheat, 1,137 acres of corn, 974 acres of oats and 608 acres of barley. Moreover, there were 1,261 acres of grassland.[11]

The Meadow Road Bridge evolved within this general historical context to provide access across the Beaver Dam River.

TRUSS BRIDGES IN WISCONSIN

The two most commonly found types of truss bridges are the Pratt and Warren. These two classifications are further subdivided into pony or low trusses, overhead or through trusses and deck trusses. The Warren truss, which two British engineers patented in 1840, placed nominal stress on the vertical members, while the diagonals served as both tension and compression members. Caleb and Thomas Pratt patented the Pratt truss in 1844, incorporating vertical compression members and diagonal tension members. During the nineteenth century, the Pratt truss seemed to be more popular because it used less iron and was easier to erect. In the 1870s, a number of variations in the Pratt design were introduced for long span bridges. To save money and material, engineers "bent" the top chord into a polygonal configuration, thereby creating a "Parker" truss. If the top chord had exactly five sides, it was called a "camelback" truss. The increased live loads of railroad locomotives and rolling stock necessitated further design innovations. The addition of substruts and/or subties greatly fortified truss bridges and transformed a Pratt into a "Baltimore" and a Parker into a Pennsylvania truss--the latter considered a "major advance in strengthening the

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Directory, 1901-1902 (Chicago: R.L. Polk & Co., 1901), 525; Polk's Wisconsin State Gazetteer and Business Directory, 1905-1906 (Chicago: R.L. Polk & Co., 1905), 565; Wisconsin State Gazetteer and Business Directory, 1915-1916 (Detroit: R.L. Polk & Co., 1915), 448; Polk's Wisconsin State Gazetteer and Business Directory, 1919-1920 (Detroit: R.L. Polk & Co., 1919), 509; Polk's Wisconsin State Gazetteer and Business Directory, 1924-1925 (Detroit: R.L. Polk & Co., 1924), 527; Polk's Wisconsin State Gazetteer and Business Directory, 1927-1928 (Detroit: R.L. Polk & Co., 1927), 433.

[11]History of Dodge County, 406; Gregory, Southeastern Wisconsin, 2:1008.

Pratt truss."[12] Another development which sparked much debate around the turn-of-the-century involved the merits of pin connections versus riveted connections for main truss members. Proponents of riveted bridges cited the advantages of increased structural rigidity and the reduction of damaging vibrations; advocates of pin-connected bridges emphasized the theoretically correct stress distribution and the smaller amount of required metal. Although no dramatic resolution occurred, a compromise of sorts was reached in the early twentieth century. Riveted bridges were designed with less duplication of members, and pin-connected bridges, suitably detailed, were still accepted for long span highway bridges.[13]

These developments affected Wisconsin bridge construction, but other circumstances were equally important. Until the latter nineteenth century, individual bridge companies were largely responsible for bridge design. Consequently, there was little, if any, standardization of design, although Pratt truss bridges seemed to predominate. Indeed, the state's oldest truss bridge, the 1877 White River Bridge in Burlington, is a Pratt. The Good Roads Movement of the late 1890s and early 1900s, however, prompted a dramatic shift by promoting greater involvement on the part of local officials and, especially, the state government. In 1907, the state legislature established a Highway Division within the Wisconsin Geological and Natural History Survey to conduct experiments in road design and to provide professional advice to local governments about specific projects.[14]

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[12]T. Allan Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," American Association for State and Local History, Technical Leaflet 95, in History News 32 (May 1977):5; Historic Bridge Advisory Committee, Working Files, on file at Office of Environmental Analysis, Department of Transportation, Madison, WI. See also J.A.L. Waddell, Bridge Engineering, 2 vols. 2nd ed. (New York: J. Wiley, 1921), 1: 176-77; J.B. Johnson, C.W. Bryan, and F.E. Turneaure, The Theory and Practice of Modern Framed Structures, 8th ed. (New York: John Wiley & Sons, 1905), 275; Milo S. Ketchum, The Design of Highway Bridges and the Calculation of Stress in Bridge Trusses (New York: Engineering News Publishing Company, 1908), 212; Henry G. Tyrrell, History of Bridge Engineering (Chicago: n.p., 1911), 184-92; Ellis L. Armstrong, ed., History of Public Works in the United States, 1776-1976 (Chicago: American Public Works Association, 1976), 109.

[13]J.A.L. Waddell, Economics of Bridgework: A Sequel to Bridge Engineering (n.p., 1921), 73-74; Alfred P. Boller, Practical Treatise on the Construction of Iron Highway Bridges, 4th ed. (New York: John Wiley & Sons, 1890), 44-49; "Discussion of American Railroad Bridges," American Society of Civil Engineers, Transactions 26 (No. 429, December 1889):593; "The Development of Bridge Trusses," Engineering Record 42 (3 November 1900):411. According to Boller (p. 47), "Whatever objection has been urged against shop-riveting is intensified in a high degree when the field-riveter steps in to do his part of the work." For an argument that pin-connected Pratt trusses require more metal than riveted Warren trusses, see Johnson, et al., Modern Framed Structures, 276.

[14]Ballard Campbell, "The Good Roads Movement in Wisconsin, 1890-1911," Wisconsin Magazine of History 49 (Summer 1966): 273-93; M.C. Davis, ed., A History of Wisconsin Highway Development, 1925-1945 (Madison: State Highway Commission, 1947), 218-22; Diane Kromm, "Milford Bridge," Historic American Engineering Record Report, unprocessed, 1987, HAER WI-37, on file at the Library of Congress, Washington, D.C.; Wisconsin Statutes, Second

The following year, Wisconsin voters overwhelmingly removed the greatest obstacle to creating a progressive statewide system of bridge and highway construction by eliminating the state's constitutional prohibition against direct state aid to transportation projects. In 1911, the legislature made its first appropriation for highway improvements. In addition, it transformed the Highway Division into an autonomous State Highway Commission (SHC), responsible for overseeing the expenditure of state funds for the development of a state highway network.[15]

The SHC emphasized the use of standardized plans for various types of bridges and culverts. Prior to this time, metal-truss bridges dominated crossings of all lengths. After 1911, however, the SHC promoted the construction of girder, beam or slab spans of steel and/or concrete for short crossings (less than thirty-five feet). The SHC particularly favored concrete spans, citing the advantages of lower cost, greater compatibility with aesthetic treatment and greater adaptability to remodeling, especially in terms of roadway widening.[16] Despite its predilection for concrete bridges, the SHC continued to design truss bridges for spans of thirty-six feet or more. The riveted Warren became the state's standard pony design. Indeed, this design became the state's most common type of highway truss bridge. Of the approximately four hundred and fifty Warren trusses in the state in 1980, over four-fifths were riveted pony trusses built according to SHC standard plans. The SHC also drafted a standard plan for riveted, overhead Pratt trusses. In the first three and one-half years of its work, the SHC designed over fifteen hundred bridges of all types. Practically all the local bridges in the state during these years were either designed by the SHC or were based on SHC standard plans. The SHC continuously revised its truss designs, drawing upon the latest engineering information. In the

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Session of the Legislature, January 10, 1849 (Southport, 1849), 182-83; Town Laws of Wisconsin, 1858, 157; Legislature of Wisconsin, Private and Local Laws, 1867, 60-61, 179-82; Laws of Wisconsin, 1881, Chapter 315, pp. 407-8; Laws of Wisconsin, 1885, Chapter 187, pp. 162-64; Laws of Wisconsin, 1907, Chapter 552, p. 292; William Fletcher Thompson, gen. ed., The History of Wisconsin, 6 vols. (Madison: State Historical Society of Wisconsin), Vol. 2: The Civil War Era, 1848-1873, by Richard N. Current, 28; Robert Nesbit, Wisconsin, A History (Madison: University of Wisconsin, 1973), 197. A sampling of available county board records suggests that county-aid bridge projects were infrequent during the 1880s and numbered five to ten per county per year during the 1890s.

[15]Campbell, "Good Roads," 279-84; Davis, Wisconsin Highway Development, 104.

[16]Hans Nelson Brue, "The Development of Highway Bridges in Wisconsin," (Bachelor's Thesis in Civil Engineering, University of Wisconsin, 1916), 4-5; Wisconsin State Highway Commission (hereafter cited as SHC), Second Biennial Report, July 1, 1911 to January 1, 1915 (Madison, 1915), 24. The SHC succinctly assessed the pros and cons of steel and concrete bridges in its Sixth Biennial Report, 1925-1926 (Madison, 1926), 67. From 1911 to 1915, truss bridges in Wisconsin cost considerably less per foot than concrete structures but then steel began its "great advance in price." See SHC, Fourth Biennial Report, 1916-1918 (Madison, 1918), 11-12; see also the comparative cost chart in Engineering News 47 (28 February 1917).

1930s, the SHC made a major commitment to keeping its standardized plans up to date by dropping the Pratt design in favor of the Warren for all overhead truss configurations. Although concrete designs eventually dominated bridge construction, metal truss bridges remained cost effective in many situations. Consequently, the SHC continued to design truss bridges until well after World War II.[17]

The number of highway truss bridges in Wisconsin has dwindled substantially over the years. Under the sponsorship of the State Historic Preservation Office (SHPO) of the State Historical Society, George Danko initiated the first systematic study of Wisconsin truss bridges in 1976. By 1980, when WisDOT established the Historic Bridge Advisory Committee (HBAC), seventeen bridges had been listed in or found eligible for listing in the National Register of Historic Places. The HBAC pursued the statewide inventory of truss bridges, which then accounted for approximately one-tenth of the state's 10,386 surviving highway bridges built before 1950.[18]

The HBAC identified an initial pool of 996, pre-1941 truss bridges that represented seventeen structural types. The HBAC screened this pool to identify the following for each truss type: those bridges which had the earliest known construction dates; those in the best condition; bridges with the best available historical data; and those with the most noteworthy features. Also considering bridges in park settings, this winnowing process reduced the initial pool to 247. The most significant bridges within each truss category were determined by applying criteria--modified as necessary--that were developed in a Virginia study.[19] The evaluation process yielded a final group of fifty-three bridges deemed potentially eligible for the National Register. Historians Jeffrey A. Hess and Robert M. Frame, III, contracted to complete a field survey and compile historical data for those bridges in 1986. The final survey totaled fifty-four bridges, including two already listed on the National Register (P-18-720 and P-53-162).

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[17]Comp and Jackson, "Bridge Truss Types;" A.R. Hirst, "Bridges and Culverts for Country Roads," Engineering News (9 October 1913): 729; Davis, Wisconsin Highway Development, 112-13; SHC, Second Biennial Report, 14, 21, 24, 30; see also SHC, Preliminary Biennial Report, July 1, 1911 to January 1, 1913 (Madison, 1913), 17.

[18]George M. Danko, "The Development of the Truss Bridge, 1820-1930, with a Focus Toward Wisconsin," unpublished report prepared for the State Historic Preservation Office, State Historical Society of Wisconsin, 1976; George M. Danko, "A Selective Survey of Metal Truss Bridges in Wisconsin," unpublished report prepared for Historic Preservation Division, State Historical Society of Wisconsin, 1977.

[19]Howard Newlon, Jr., "A Trial Rating System for Bridges," Interim Report No. 1, Criteria for Presentation and Adaptive Use of Historic Highway Structures, Virginia Highway and Transportation Research Council, 78-R29.

THE MEADOW ROAD BRIDGE

The Meadow Road Bridge was built by the Milwaukee Bridge and Iron Works, a firm that emerged from a small, private concern founded in 1870 by Leon Soulerin and Garth W. James.[20] In 1872, the two partners of the Works built an impressive railroad bridge over the White River in northern Wisconsin. The bridge was 1,600 feet long and 110 feet above the water.[21]

After patenting an unusual drawbridge in 1874,[22] Soulerin dropped out of the company in 1876, while James left in 1877. Milwaukee Bridge and Iron came under the control of F.S. Ilsley in 1877, when an advertisement depicting a substantial Parker truss on the Baltimore & Ohio Railroad in South Chicago, Illinois, touted how the company built "Wrought Iron Railway and Highway Bridges.[23] Only one year later, however, Ilsley sold the company. Despite his short tenure, he was praised as a successful bridge builder, for under his ownership, the company completed bridges in Darlington, Racine, Stevens Point and Theresa, Wisconsin, as well as in Mississippi and Iowa.[24]

William H. Keepers, who had joined the firm in 1874, purchased a partnership in 1878. An Ohio native, Keepers had been engaged in bridge building since 1866. His first partner at Milwaukee Bridge and Iron was James H. Cunningham, a native of Edinburgh, Scotland, who was a member of the Liverpool and American Societies of Civil Engineers. Cunningham had immigrated to the United States in 1876 and immediately found work as an engineer with Milwaukee Bridge and Iron. Under the lead of Keepers and Cunningham, the company had a capacity of eighteen hundred tons per year by 1881 and was involved in "iron work for bridges of all kinds, piers,

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[20]"Illustrated Description of Milwaukee," in Illustrated Annual Review, Milwaukee Trades and Industries (Milwaukee: Milwaukee Sentinel, 1889), 149.

[21]Roy L. Martin, History of the Wisconsin Central (Boston: Railway and Locomotive Historical Society, 1941), photograph caption facing p. 30. The bridge appears to be an iron trestle, with mid-panel bracing reminiscent of the Fink truss design.

[22]Specifications of Patents, Patent 153,729, 4 August 1874:62. The bridge was a "lowering bridge," which submerged the deck under water. No record has been found that a bridge based on this patent was ever built.

[23]Milwaukee Sentinel, 9 November 1877; Lola Bennett, "White River Bridge, (aka Bienemann Bridge)," Historic American Engineering Record (HAER) Report, HAER No. WI-16, 1987, on file at the Library of Congress, Washington, D.C. Ilsley, presumably related to the prominent Milwaukee banking family, had signed Soulerin's 1874 bridge patent as a witness. See Specifications of Patents, Patent 153,729.

[24]Milwaukee Sentinel, 9 November 1877; 3 December 1877.

trestles, roofs, turn-tables and general iron construction."[25]

Cunningham retired in 1882 and was replaced by Augustus T. Riddell, the former owner of a steam bakery.[26] In 1887, Keepers and Riddell filed papers of incorporation for Milwaukee Bridge and Iron, with a capital stock of $125,000.[27] Two years later, L.E. Sangdahl, a civil engineer, directed ten draftsmen while the firm employed two hundred men in the shops and seven to ten gangs of men for erecting, each ranging between five to seventy-five workers. Contracted for projects in all the contiguous states as well as Texas, Nebraska and Colorado, the firm grossed over $800,000 in 1889. Among these projects, the Belle Island Bridge in Detroit, Michigan, had eleven Pratt overhead spans of 156 feet each and a 318-foot draw span. The cost of this bridge was $300,000. Another Milwaukee Bridge and Iron project was the impressive Menomonee River Valley Viaduct in Milwaukee, which was 2,085 feet long and cost $75,000. Confident of future expansion, company officials purchased an additional six acres of land in Milwaukee to "be built upon to furnish more shops and factory room."[28]

Julius G. Wagner, a long-time Milwaukee iron manufacturer, assumed ownership of the successful firm by 1892.[29] At the same time, Wagner maintained his firm known as Architectural Iron Works. In 1897, he may have consolidated both into the Julius G. Wagner, Co.[30] As for the former owners, Riddell went on to the Milwaukee Variety Iron Works, and Keepers joined James H. Wynkoop in a consulting and

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[25]Frank Abiall Flower, History of Milwaukee, Wisconsin (Chicago: Western Historical Co., 1881), 1,295.

[26]The Milwaukee City Directory for 1878 (Milwaukee: William Hogg, 1878), 409, 539; Letterhead Correspondence, 16 January 1882, in response to bridge letting for Walnut Street to Oakwood Street Bridge, in Oconomowoc File, Contract Records Collection (1867-1920), unprocessed collection, Archives Division, State Historical Society of Wisconsin, Madison, WI.

[27]Milwaukee Sentinel, 9 April 1887.

[28]"Illustrated Description," 54, 149; Milwaukee Sentinel, 15 January 189.

[29]As early as 1871, Wagner was a partner with John Hornbach in the firm, Hornbach & Wagner, which made "iron doors, railings, &c." John Thickens, comp., The Milwaukee City Directory for 1871-1872 (Milwaukee: By the compiler, 1871), 301, 345.

[30]Keepers and Riddell owned the company through 1890. See Wright's Directory of Milwaukee for 1890 (Milwaukee: Alfred G. Wright, 1890), 584. Regarding Wagner, see Wright's Directory of Milwaukee for 1892 (Milwaukee: Alfred G. Wright, 1892), 946, 1,040; Wright's Directory of Milwaukee for 1897 (Milwaukee: Alfred G. Wright, 1897), 965, 1,066. Note that the Milwaukee Bridge and Iron Works is not listed in the Wisconsin State Gazetteer and Business Directory, 1891-1892. (Chicago: R.L. Polk & Co., 1891).

contracting engineering firm.[31] Wagner remained in control of Milwaukee Bridge and Iron until 1901, when it was joined with other concerns to form the American Bridge Company.[32] For a few years, however, Milwaukee Bridge and Iron retained its original name in advertising. The 1905-1906 City Directory is the last one in which Milwaukee Bridge and Iron Works is listed.[33]

The exact history of the Meadow Road crossing and the bridges associated with it, is somewhat vague. It appears that the earliest structure was built between 1860 and 1873. Oriented on an east/west axis, it may have been the bridge about which the Lowell Town Board expressed concern in 1889. That structure was likely replaced shortly thereafter, since an 1890 plat map identifies a northeast/southwest-oriented crossing on Meadow Road--the same orientation of the bridge today.[34] Why a structure was built at that location is unclear since there appeared to be nothing unique about the crossing in the context of a main travel route. Indeed, the Low Road Bridge, a structure contemporary with the Meadow Road Bridge, was located on the Beaver Dam River--only about one-and-three-quarter miles to the south. And the Sock Road Bridge (HAER NO. WI-2), which was noted as "not significant to its location" on the Beaver Dam River, is within two miles of the subject structure.[35] Consequently, it is likely that the Meadow Road crossing simply evolved as one of convenience for the farmers that traveled between Lowell and Beaver Dam, and throughout the west central region of Dodge County, in general. As such, it was built to help serve and maintain a significant, county-wide industry.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural Character: The Meadow Road Bridge was built in ca. 1890. It is a six-panel, Pratt through truss bridge.

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[31]Wright's Directory of Milwaukee for 1891 (Milwaukee: Alfred G. Wright, 1891), 459, 996; Wright's Directory of Milwaukee for 1892 (Milwaukee: Alfred G. Wright, 1892), 474, 762.

[32]A short description of the merger is provided in James L. Cooper, Iron Monuments of Distant Posterity, Indiana's Metal Bridges, 1870-1930 (Indianapolis?: Indiana Department of Highways, 1987), 32-39.

[33]Wright's Directory of Milwaukee for 1905-1906 (Milwaukee: Alfred G. Wright, 1905), 1,362.

[34]Salkin, Determination of Eligibility for the Meadow Road Bridge, 1993, WI: 8/1-2.

[35]George Danko, "Sock Road Bridge," Historic American Engineering Record Report, 1977, HAER No. WI-2, on file at the Library of Congress, Washington, D.C.

2. Condition of fabric: The historic fabric of this structure is generally good. Structural elements showing the greatest loss of integrity include a hip vertical that had to be repaired and reinforced and the west end hip verticals.

B. Description:

The Meadow Road Bridge is 102 feet long. Its single lane traffic deck is 15 feet 8.5 inches wide, while the structure's overall width is 17 feet 11 inches. Anchored to concrete abutments, the traffic deck is carried by five floor beams, each of which is a 24 inch by 6.24 inch built-up "I" beam that is fabricated from angles and plates. Perpendicular to the floor beams are seven deck stringers. The two outer stringers are 10 inch channels, while those in between are 10 inch by 4 inch "I" beams. The bottom lateral bracing is comprised of .87 inch rods that are threaded and bolted.

Floor beams one and five are hung from hip verticals of paired, 1 inch by .87 inch bars, while beams two, three and four are hung from double channel, intermediate verticals with lacing front and back and overall dimensions of 8 inches by 4 inches. The inclined end posts and top chords are 11 inches by 7.5 inches and fabricated from channels, cover plates and lacing. The top lateral bracing consists of .87 inch rods, while the top struts are comprised from 3 inch by 2 inch angles, back-to-back, with a 5.5 inch-high plate set in between. The portal struts are fabricated from 2 by 2.5 inch angles, back-to-back with cross-lacing of 2 inch by .25 inch flat iron, single 1.75 inch angles and 2 inch by 2.5 inch angles. Portal bracing utilizes 2 inch by 2.5 inch angles, back-to-back.

The dimensions of the diagonal members vary with each panel. Those in panels two and five consist of paired, 2 inch by .75 inch bars, while those in panels three and four are paired, 1.25 inch by .75 inch bars with a single .87 inch rod with turnbuckles that cross them. Bottom chords in panels one, two, five and six are paired, 2 inch by .62 inch bars, although those in panels three and four are paired, 2.5 inch by .87 inch bars.

All major connections are pinned.

The bridge has no ornamentation. It does, nevertheless, have a three course, pipe railing, the top chord of which is 44.25 inches above the deck.

C. Setting:

The bridge is located in the Town of Lowell, at that point where Meadow Road crosses the Beaver Dam River. The area is rural and characterized by low wetlands. A wooded parcel of land is immediately east of the bridge; otherwise, the area is

largely open. A farm is located on a rise, about a thousand feet west of the bridge.

PART III. SOURCES OF INFORMATION

A. Bibliography:

1. Primary or unpublished sources:

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Wright's Directory of Milwaukee for 1891. Milwaukee: Alfred G. Wright, 1891.

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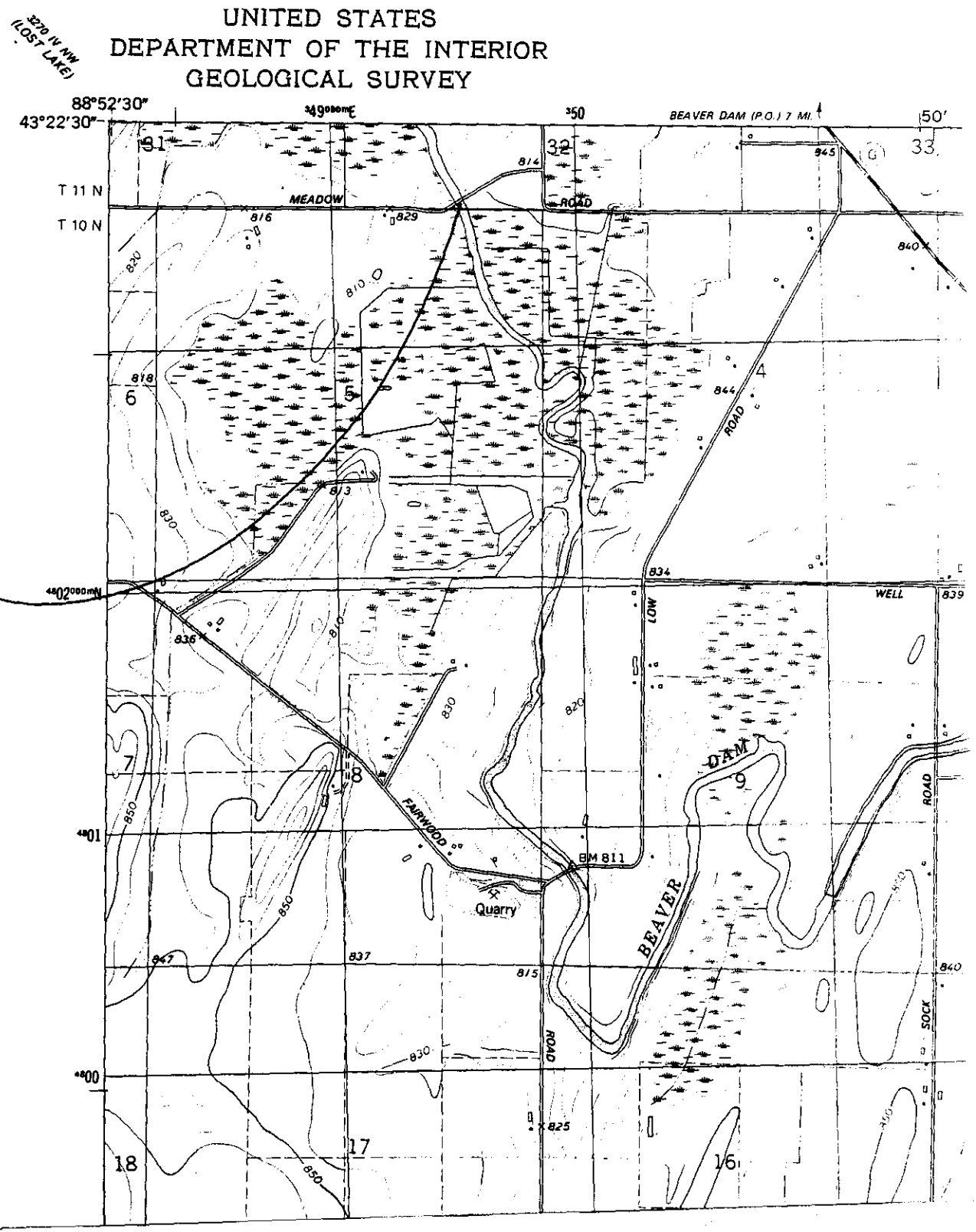
6 June 1995

PART IV. PROJECT INFORMATION

This project has been sponsored by the Wisconsin Department of Transportation. Strand Associates, consulting engineers in Madison, Wisconsin, formally acted as the contracting agency. The project was directed by Dr. John N. Vogel, Principal Investigator and Sr. Historian for Heritage Research, Ltd. (HRL), who provided the photographic documentation and the architectural/technical data. He also edited and prepared the final document. The general truss bridge context was prepared by Jeffrey Hess, Robert Frame and Robert Newbery in a report for the Wisconsin Department of Transportation. That context was edited and summarized by Kevin Abing, who also prepared the local contextual information. David J. Vogel also assisted during the photographic activities associated with this project.



Meadow Road Bridge
Lowell Vicinity
Dodge County
.M Coordinates:
16/349525/4803600